

Forest Insect Conditions
on the Teton National Forest
and in Grand Teton National Park
1968

The following evaluation has been prepared for both the Teton National Forest and Grand Teton National Park as certain insect conditions are common to both. Briefly, the mountain pine beetle infestation is, in general, continuing its downward trend. Spruce budworm damage increased somewhat. Sugar pine tortrix feeding on lodgepole pine persisted, and spruce beetle activity became much more apparent than in recent years.

Mountain pine beetle, Dendroctonus ponderosae

The declining trend in mountain pine beetle activity that was reported in 1967 continued in 1968. Aside from localized areas of population buildup, the overall situation is encouraging on both the Teton National Forest and in Grand Teton National Park. A comparison between 1967 and 1968 aerial insect survey maps once again reveals a striking similarity in the extent and distribution of the current insect infestation. In any reference to the maps, tree count estimates are meant to indicate relative densities between portions of the infestation and should not be construed as being absolute numbers on the ground.

Lodgepole pine mortality is again most prevalent in the lower Teton Wilderness, south into the Buffalo Fork drainage, up the Hoback River drainage, and in various portions of Teton Park. Tree mortality over most of these areas continues to decline far below levels reached in 1966.

Based on past infestation knowledge, areas exhibiting particular hazard potential or supporting recent beetle activity were sampled this fall after the insect flight and attack period had terminated. By strip sampling each area, a comparative tally of trees attacked in both 1967 and 1968 was derived. Such figures when reduced to a ratio can indicate the trend of mortality in the surrounding area through this year. The foliage of trees tallied this year as new attacks will, of course, fade or turn red next summer. Attack ratios, aerial survey results and on-the-ground examinations of current brood development, and apparent brood vigor were used to determine infestation trends. These joint considerations account for what at first appear to be discrepancies between certain attack ratios and trends in the following table:

<u>Location</u>	<u>Area</u>	<u>Attack Ratio</u> <u>1968:1967</u>	<u>Trend</u>
Teton N.F.	Arizona Cr.	1.8:1	Static to slightly increasing
	Carpenter Draw- Lost Creek*	1.0:1	Decreasing

* Only two trees tallied.

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<u>Location</u>	<u>Area</u>	<u>Attack Ratio</u> <u>1968:1967</u>	<u>Trend</u>
Teton N.F.	Four-Mile Meadow	No new attacks found	Decreasing
	Granite Creek	2.5:1	Increasing
	Riling Draw	0.4:1	Decreasing
	No. Fk. Fisherman Cr.	0.4:1	Decreasing
	Kilgore Cr.	No new attacks found	Decreasing
	Cliff Creek	1.2:1	Slightly increasing
	Coburn Creek	1.1:1	Static
Grand Teton N. P.	Two Ocean Lake	No new attacks found	Decreasing
	Signal Mountain	1.3:1	Decreasing
	Potholes Area	1.2:1	Static
	West of Timbered Island	1.2:1	Static
	Whitegrass Ranger Sta.	2.1:1	Increasing
	South of Phelps Lake	2.0:1	Increasing

In summarizing the current status of the Teton infestation, it is well to generalize conditions according to the following areas:

1. Forest land north of the Buffalo Fork.
2. Forest land south of the Buffalo Fork but north of the Hoback River drainage.
3. Forest land between the Snake River Range divide and the Snake River.
4. Grand Teton National Park.

In that area north of the Buffalo Fork, most of the active mountain pine beetle tree-killing persists in the upper drainages of the Wilderness Area. This progression of an infestation to higher elevations through successive years is commonly observed. The reasons for this so-called "movement" are not yet fully understood. It probably results from favorable insect buildup conditions within the upper stands as well as flights from lower stands. With the exception of the additional tree mortality in the upper drainages, the infestation in the Wilderness Area continues to decline due to natural causes. No treatment has been conducted there and susceptible size classes still exist. Mortality, however, is markedly reduced over recent years.

South of the Buffalo Fork, tree killing has recently occurred, but basically the stands there contain only scattered attacks from either 1967 or 1968.

The Hoback River country has generally undergone a decline in infestation level. There are, however, examples of some beetle buildup. The Granite Creek buildup ratio data resulted from counts along a 1-mile strip cruise of 20 new attacks and 8 old (1967) attacks. A buildup ratio sample becomes

increasingly more valid as the density of attacked trees increases. Low counts, conversely, are more easily reversed. For this reason, the Granite Creek data must be tempered by field observations. The actual beetle situation there may well approach a static condition. The most noteworthy exception to a generally static situation is Cliff Creek where pine patches and mixed stands contain a pattern of scattered tree mortality that has been increasing slightly over the past three years.

Along the base of the Snake River Range in Coburn Creek, red-topped faders and new 1968 attacks are prevalent. Broods appeared well established, but the incidence of unsuccessful "strip attacks" has been high the last two years.

In Grand Teton National Park, an overall decline in tree mortality exists with the exception of the area around Whitegrass Ranger Station and Phelps Lake. That area appears to be undergoing a localized resurgence of beetle activity.

To better assess the future hazard due to beetle buildup on the Forest or in the Park, it is well to consider as high risk those areas where residual trees of sufficient diameter remain. As long as a sufficient infestation source exists, such timber is usually attractive to nearby flights of attacking beetles. Lodgepole pine on the Forest east of Antelope Flat, although in mixture with other species, does consist of susceptible size classes. Although Teton Park has sustained significant mortality in recent years, it has not, for the most part, received the high frequency of attack experienced by the Forest. Due to this and the fact that control efforts in the Park have exerted an effect on the insect population, many vulnerable trees still exist. Red tops are expected to persist in such areas of the Forest and Park until trees of the most susceptible sizes are depleted through annual stand attrition, or the current beetle infestation finally wanes to a very low level.

The overall condition should become increasingly favorable from a forest management standpoint. In light of the overall infestation decline, we do not recommend control next year.

Spruce budworm, Choristoneura occidentalis

The spruce budworm defoliation that first occurred in 1967 in Horse Creek and along the Snake River south of Hot Springs spread considerably this year with additional defoliation occurring in nearby Fall Creek.

An increase from 2,900 acres of defoliation on the Forest in 1967 to 14,600 acres in 1968 is depicted as follows:

Defoliation Category	Acres	
	1967	1968
Light	2,900	9,040
Medium	-	5,560
Heavy	-	-
TOTAL	2,900	14,600

In order to gain an indication of expected defoliation in 1969, Douglas-fir foliage containing budworm egg masses was collected and examined late this summer. Representative samples were collected in Martin Creek, and the resulting counts indicate less than 15-percent defoliation in this area next year. The data must be considered along with the fact that the Teton's infestation is part of a much larger outbreak covering 132,660 acres of the Targhee, Bridger, and Caribou National Forests as well as the Teton. As a result, although survey results indicate less than 15-percent defoliation, it is probable that the infestation on the Teton will increase in both severity and extent in 1969.

The 1968 population defoliated Douglas-fir, subalpine fir, and Engelmann spruce. No thorough study has yet been possible in the Intermountain Region to ascertain the actual effects of budworm defoliation on host trees. We know from experience that repeated heavy feeding will result in some top kill and possible mortality.

Research conducted elsewhere indicates that "damage" in the form of radial increment loss may also occur. Inasmuch as defoliation has not been heavy on the Forest and the outbreak is relatively new, damage is not expected to be great enough to justify control efforts at the present time.

Spruce beetle, Dendroctonus obesus

Observable beetle killing of Engelmann spruce on the Forest and in the Park exceeds that of recent years. Widely scattered groups of from one to ten attacked trees were found in certain tributaries on the west side of Cliff Creek. Small groups were also detected at the head of Coburn Creek, North Fall Creek, Mosquito Creek, and Buck Creek. From available on-the-ground information, there is a slight upsurge of beetle killing around old epicenters of beetle activity. Such centers may be adjacent to old windfalls, or otherwise weakened spruce.

Conditions have in the past couple years favored a beetle increase. By the nature of the beetle's habits it is difficult to assess the future infestation trend. We have reason to believe that mortality may continue on at least the same level next year, but that no catastrophic population increase is eminent. Two things should be emphasized:

1. That we are aware of a population increase. Although it is not yet very great, we should take advantage of this early knowledge and closely monitor the populations in the course of our field travels.
2. That in light of spruce beetle evidence, we should continue to properly dispose of spruce slash following logging.

A very similar situation exists in the Park, except that groups of attacked spruce are larger. While a patch of over ten trees was detected below the patrol cabin in Cascade Canyon and in West Canyon, groups of 20 to 50 were aurally detected in Owl, Berry, and Hechtman Creeks. This population upswing is probably due to the same general conditions affecting those on the Forest. No ground examination has yet been made in these drainages, but field surveillance is anticipated for next year.

No spruce beetle control is considered necessary at present.

Sugar pine tortrix, Choristoneura lambertiana

Sugar pine tortrix activity on lodgepole pine on the Forest and in Teton Park is quite widespread. The tortrix population of greatest magnitude in the last few years is on the Forest around Fall Creek. Defoliation was recognizable from the air this year around Red Top Meadows, the North and South Forks of Fall Creek and in Taylor, Cottonwood, and Mosquito Creeks to the north. In all, 1,760 acres of damage were mapped in the above areas. In Teton National Park, damage to pine leaders was observed in the course of continued on-the-ground evaluation surveys. Feeding was most prevalent at scattered locations along the Park Service road between Jenny Lake and Signal Mountain.

Damage is most common on smaller trees with feeding primarily confined to terminal leaders. Information on the insect's biology is quite lacking. Based on our current knowledge, however, we do not recommend any control at present.

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